Prof. A. G. McAdie, of the San Francisco, Cal., office, reports a lecture, illustrated with stereopticon, on atmospheric vapor and mountain observatories at the Congregational Church, Reno, Nev., under the auspices of the State University, on the evening of February 21.

Mr. G. Harold Noyes, Observer, La Salle, Ill., reports the following educational work: An informal address in the Weather Bureau office, with explanation of instruments, to the members of the La Salle County Editorial Association. April 28, 1905, a prepared address was delivered before the class in general science of the La Salle-Peru Township High School; the class subsequently visited the office in small sections. During the Christmas vacation a class from the Lincoln School visited the Weather Bureau office, and listened to an explanation of the work of the Bureau, and studied the instruments; a day or two later some students of Northwestern University made a similar informal visit.

Mr. G. R. Oberholzer, Observer, La Crosse, Wis., under date of February 16, reports that classes in physical geography and physics from the senior class of the high school had recently visited the Weather Bureau office; the instruments used by the Bureau were exhibited and explained, and a talk was given covering the making and use of weather maps. He was also called upon to address the La Crosse Agricultural, Horticultural and Dairy Association on February 14, when the movement of storms and cold waves was illustrated by means of maps distributed among the audience.

Mr. H. W. Richardson, Local Forecaster, Duluth, Minn., under date of February 27, reports that the physiography section of the Duluth State Normal School, 40 pupils, visited the Weather Bureau office, and that the instrumental equipment was explained and a brief lecture delivered, dealing with meteorology, forecasting, and the general work of the Bureau.

Mr. G. N. Salisbury, Section Director, Seattle, Wash., under date of February 20, reports the following educational work during January, 1906: On the 23d he completed his course of instruction for the semester (22 lessons) to the class in practical meteorology at the State University. On the evening of the 23d, before the Young Men's Real Estate Club, a short sketch was given of the inception and work of the old Signal Service, and the organization, methods, and scope of the work of the present Weather Bureau. On January 24 a section of the Ballard High School class in physical geography visited the office, and were shown the instruments. On the 26th a second section of the above class made a similar visit, and on the 30th a class in physical geography from the Brighton High School. On the evening of February 19 Mr. Salisbury lectured before the Men's Club of the First Methodist Church of Seattle on wind, rain, and weather changes due to cyclones and anticyclones.

Mr. James H. Spencer, Observer, Dubuque, Iowa, reports that on the evening of March 14 he spoke on the weather before about fifty members of St. Luke's Fraternity of that city; the talk was illustrated by use of weather maps and blackboard diagrams.

Mr. W. P. Stewart, Escanaba, Mich., under date of February 7 reports that the class in physics from the Escanaba High School visited the Weather Bureau office in two sections on February 2 and 6; each section was given a 45-minute lecture on the construction and use of thermometers, and the distribution of atmospheric temperatures.

LIFE AND WORK OF JAMES P. ESPY.

In reply to a recent letter the Editor has said:

The general relation of modern meteorology to Professor Espy's work is well known, but the special relations between himself and the National Government are only imperfectly understood. He was appointed Government meteorologist about 1842, and assigned to duty first in the War Department, then in the Navy Department, and eventually under the Smithsonian. The last few years of his life seem to have been spent, without Government salary, in putting his fourth report through the press. The details of his official relations to the Government can, I think, only be discovered by careful search through the records of the various departments, with the hearty assistance of the respective officials. I hope that some one will work up this chapter in Espy's life. A preceding period, namely his life in Philadelphia, is equally interesting, but can be worked up only by some one having access to the records in that city.

The Editor has long been collecting whatever scraps of information he can find relative to the life and work of James Pollard Espy. A few items are given in the MONTHLY WEATHER REVIEW (see vol. 24, 1896, p. 334; vol. 25, 1897, p. 163; and vol. 28, 1900, p. 209); also Weather Bureau Bulletin 11, pp. 305-316. There is also a sketch of his life, with a portrait, in Popular Science Monthly for April, 1889, pp. 834–840. See also "Remarks on the character, life, and work of Espy," by Professor Bache, in the Smithsonian Report for 1859, pages 108–111.

The following article is copied from "Notes and queries, historical and genealogical, chiefly relating to interior Pennsylvania," edited by William Henry Egle, reprint, third series, volume 3, Harrisburg, Pa., 1896, page 73. The items have undoubtedly been gathered by Doctor Egle from "A few incidents in the life of Prof. James P. Espy," by his niece, Mrs. L. M. Morehead, Cincinnati, Ohio, 1888, and are not easily accessible to the readers of this REVIEW.

In the "Reminiscences of B. Perley Poore," lately issued from the press, there appears a strange misstatement in a short sketch of the life of the distinguished meteorologist, Prof. James P. Espy, to the effect that his education had been so neglected that at the age of seventeen he could not read. In justice to his parents, people of education, and to his relatives, now long passed away, who at different times in the long ago filled important positions in the centers of learning, I would correct this error.

Mr. Espy was born in Pennsylvania, but when a mere infant his father removed to Kentucky. After a few years, having purchased a tract of land in the beautiful Miami Valley, he removed to Ohio. While a resident of Kentucky his eldest daughter married Mr. Joseph Simpson, of Mount Sterling, brother to the late Judge Simpson of the Court of Appeals of that State, and with this sister James Espy remained, for better advantages of education that could be secured at that time in Ohio, and was "at eighteen" a student at Transylvania University in Lexington.

James Espy did not graduate, at least we have no record to that effect, but, after a few years of close application, joined his family in Ohio and commenced the study of law while teaching school in Xenia. He was then near 23 years of age. His love for teaching amounted to enthusiasm, and although he completed his law studies he finally abandoned the idea of choosing the law as his profession, and determined to follow the bent of his inclination and become a conscientious instructor of youth.

When Mr. Espy was about 25 years of age he decided to return to his native State, where he felt he could avail himself of more abundant facilities for the acquirement of scientific knowledge, from early youth a strong craving of his nature. He went at once to Bedford, and through the influence of his relatives there was appointed principal of the academy at Cumberland, Md., which position he filled with credit to himself, and satisfaction to the intelligent board of trustees.

During the first few years succeeding the establishment of the Smithsonian Institute, Professor Henry and Professor Espy were intimately associated as co-regents[1] in its management, and between them there always existed a warm friendship. It is not many years since the writer of this sketch sat by Professor Henry at a charming dinner on K street,

[1] Neither Henry nor Espy was a regent.—*C. A.*

opposite the beautiful Franklin Square, when after some pleasant reminiscences of their old association the genial old professor remarked: "There is no question in my mind but that Professor Espy should be regarded as the father of the present Signal Service of the United States,[2] his theory of storms having led the way to its establishment and present success," adding that the charts now used in the service were identical (with some slight modifications)[3] with those the old Storm King constructed for use in the Meteorological Bureau of the War Department when he was at its head. This interview occurred in 1875. General Myer, "Old Probabilities," as he was called, made a similar statement to the writer.

The mineral springs at Bedford, so fashionable a resort 50 years ago, are situated about one mile from the village, and were often visited by Professor Espy during the many years of his residence in Philadelphia, where he taught a classical school while investigating the phenomena of the forces of the atmosphere which led to his discovery of "The Theory of Storms."

An old friend of the professor, a fellow-scientist, who visited him often at his home on Chestnut street, described to the writer his method of pursuing his atmospheric calculations, which necessarily must be carried on out of doors. The fence inclosing the small yard was of smooth plank, painted white; the yard was filled with vessels of water and numerous thermometers for determining the "dew-point". The white fence, when the narrator saw it, was so covered with figures and calcutions that not a spot remained for another sum or column.

In 1839 Mr. Espy visited England for the purpose of presenting his theory of storms before the British Association of Science. Sir John Herschel, with other eminent scientists, was present and received him with cordial greetings and warm appreciation. He spent several weeks most delightfully in many of the "stately homes" of that country, where he and his wife were agreeably entertained. In the autumn of the same year he visited Paris, where a committee had been appointed by the Academy of Science to receive him, presided over by the illustrious Arago, who was enthusiastic in his reception of the storm theory, as presented to them in several lectures by its discoverer. In his address of welcome, Arago remarked that "England had its Newton, France its Cuvier, and America its Espy." Students of nature are usually of serene and happy temperament, and Mr. Espy was no exception to the rule. He never seemed impatient or concerned at the slow recognition of his discoveries as means of practical use in commerce or other national needs. He would say, "I leave all this to the future, sure that its adaptations to the uses of life must one day be seen and acknowledged." He left no children, and but few are now living of his near relatives, but those few remember with reverence the broad charity and earnest purpose of the "Storm King."

LECTURES ON METEOROLOGY.

Referring to a gentleman who desires material to enable him to give a lecture on meteorology, one of our best section directors quotes the State School Commissioner to the effect that the teachers and children of the State should be protected from lectures or instruction of the character contemplated by the proposed lecturer.

This remark may apply possibly to many others. Errors are disseminated by public lecturers quite as easily as by books or any other method. It is impossible but that errors should exist and be propagated, like noxious weeds, but the wiser commissioners of education, school commissioners, or other authorities do the best they can to secure the best available teachers and lecturers. The great demand for such instruction in meteorology will be realized when we consider that in one single State alone there will be held 50 teachers' institutes during August, 1906, and other States will hold as many, or even more. Therefore incomplete and inaccurate teaching is inevitable. The Weather Bureau can not supply the intense demand for lecturers during the summer season, although the Chief will do the very best he can. Our best school books probably contain errors relating to meteorology, but they do not attempt to answer the innumerable questions, sometimes very foolish and unnecessary, that are asked by the teachers and the scholars whenever they come in personal contact with an intelligent meteorologist.

We hope that some of our best men may have time to prepare lectures to be sent in typewritten copies, or newspaper print, to many educational centers, where they may be delivered orally, precisely as has been done for many years past with great success in the State of New York.

In other cases some of our best men might well take two months' furlough in the summer and devote themselves wholly to the work of the teachers' institutes. They would probably reach several hundred persons every day of the week, and disseminate valuable information among the teachers, which would be retailed to the tens of thousands of scholars.

[2] There are many others who have equal claims to be called "fathers" of the beneficent Weather Bureau.—*C. A.*

[3] These modifications are very important and fundamental.—*C. A.*

HAILSTORM IN THE BAHAMAS.

On page 260 of the MONTHLY WEATHER REVIEW for June, 1905, we published some account of a hailstorm on April 18 in the island of Spanish Wells, about fifty miles west of Nassau, an event that was said to have been very local and entirely phenomenal. The following note relates to a similar hailstorm, 60 miles east of Nassau. From these two reports it is reasonable to infer that local hailstorms are no rarer in that region than in many other parts of the world. Such storms are always local, and there is but small chance that they will frequently visit any locality, such as the small individual islands of the sparsely inhabited Bahamas. Nothing but a faithful record for many years would justify any attempt at determining the relative frequency of these local hailstorms. Our own impression is that a given square mile of territory anywhere in the United States east of the one hundredth meridian is about as liable to experience a severe hailstorm as it is to experience a disastrous tornado, and that is to say about once in a thousand years.

NOTE BY P. H. BURNS, SUPERINTENDENT BAHAMAS CABLE.

On Sunday morning, February 14, 1906, between midnight and one o'clock a. m., a severe hailstorm visited Governours Harbour, Eleuthera, about sixty miles east of Nassau. A report from the Resident Justice of that settlement states that "it rained very hard for a half hour, with moderate wind from east. The wind then freshened and veered to southeast when hail began falling very heavy and lasted about fifteen minutes. The wind then fell some and shifted to the southwest with renewed rain. Next morning the effects of the hail could be seen on buildings and trees and it was on the ground in some places about six inches. A number of small birds were killed. The hailstorm did not extend for more than a quarter of a mile around the town. Nearby cultivated areas were slightly damaged. Rainfall 1.75 inches."

A FAKE RAIN MAKER.

Mr. Otto J. Klotz, the Chief Astronomer of the Dominion of Canada, and a very active friend of honest meteorology, kindly sends the following extract from The News, of Toronto, March 3, 1906. We know of no better way to protect the public than to expose the pernicious activity of the fake rain makers, the hail preventers, and the planetary forecasters:

Ottawa, March 3.—In the appropriation ordinance passed last autumn by the Yukon Council appears a vote of $5000 for the purpose of "encouraging meteorological experiments on the Dome"—the peak which dominates the vicinity of Dawson—"in the summer of 1906." This innocent item covers one of the quaintest pieces of administration ever perpetrated by a Canadian legislative body.

The rainfall is an important consideration in the Yukon, as the miners need water for their operations, and a wet summer is as advantageous as a dry one is the reverse. So far as observations extending over a very few years can serve as an indication, wet and dry summers roughly alternate. The summer of 1905 was marked by a drought, so that the balance of probabilities is in favor of a rainy summer this year.

Southern California for some time has been the home of a rain maker, one Hatfield, whose method of operation seems to be the liberation of certain chemicals, which are supposed to induce showers. Mr. Hatfield has advertised his methods and his alleged successes with some enterprise, and the administration of the Yukon has become an admirer of his. The "meteorological experiments" are to be conducted by him, and the $5000 is for him.

STANDS TO WIN ANYWAY.

Private persons have subscribed $5000 and the Yukon Council supplies another $5000. Mr. Hatfield is to spend the summer in the country and his expenses, estimated at $2000, are to be defrayed in any event. If it rains, he is to get the other $8000. Thus Mr. Hatfield occupies an advantageous position in the bargain. He will get $2000 expense money in any event, and he will get $8000 more, (1) if he "makes" the rain, or (2) if the rain happens to come independently of his liberation of chemicals.